

## **CLAIMS**

What is claimed is:

1. (amended) A voltage-controlled oscillator oscillating at an oscillator frequency comprising:

an LC-resonant circuit with at least one inductor;

a controllable switching means which is arranged in the LC-resonant circuit in such a way that it periodically has a conducting and a non-conducting state at the oscillator frequency and has a control input connected to a variable dc voltage, the control voltage  $U_{con}$ ; and

a further inductor which can be periodically switched in parallel or in series with the inductor by way of the switching means actuated at the oscillator frequency.

2. (amended) The voltage-controlled oscillator of claim 1, further comprising:

a further inductor, periodically connected in parallel or in series with a plurality of inductors by way of a respective controllable switching means at the oscillator frequency and the controllable switching means is controllable by a variable control voltage  $U_{con}$ .

3. (amended) The voltage-controlled oscillator of claim 1, wherein:

the relationship of the duration of the conducting state and the duration of the non-conducting state of the switching means within an oscillation period of the oscillator varies, depending on the control voltage  $U_{con}$ .

4. (amended) The voltage-controlled oscillator of claim 1, wherein:

the time-averaged effective inductance varies, depending on the control voltage  $U_{con}$  according to the relationship of the duration of the conducting state and the duration of the non-conducting state of the switching means within an oscillation period of the oscillator.

5. (amended) The voltage-controlled oscillator of claim 1, wherein:

the controllable switching means comprises switching transistors.

6. (amended) The voltage-controlled oscillator of claim 17, wherein:  
the MOSFETs have gate terminals that are connected to the control input of the control voltage  $U_{\text{con}}$ .
7. (amended) The voltage-controlled oscillator of claim 6, wherein:  
the MOSFETs have source terminals that are connected to parts of the circuit arrangement carrying the oscillator frequency.
8. (amended) The voltage-controlled oscillator of claim 1, wherein:  
the oscillator is of a CMOS or bipolar technology.
9. (amended) The voltage-controlled oscillator of claim 1, wherein:  
the oscillator is used in frequency synthesizers for wide-band systems and for multi-band uses and for clock production and clock recovery in high-speed circuits such as for example microprocessors and memories.
10. (amended) The voltage-controlled oscillator of claim 1, wherein:  
a voltage-controlled capacitance is integrated in the oscillator, which is connected to a tuning voltage  $U_{\text{tune}}$  by way of a further control input, the tuning input.
11. (amended) The voltage-controlled oscillator of claim 10, wherein:  
the voltage-controlled capacitance is embodied by means of at least one variable capacitor diode, wherein the effective capacitance depends on the tuning voltage  $U_{\text{tune}}$  at the tuning input.
12. (amended) The voltage-controlled oscillator of claim 10, wherein:  
the tuning input of the oscillator is connected to an output of a phase-locked loop and the output of the voltage-controlled oscillator is connected to an input of the phase-locked loop.

13. (amended) The voltage-controlled oscillator of claim 1, wherein:  
the noise of the control voltage at the control input is blocked out by means  
of a high capacitance between the control input and ground.
14. (amended) The voltage-controlled oscillator of claim 10, wherein:  
the tuning input of the voltage-controlled oscillator is connected to the  
output of a phase-locked loop and the control input of the voltage-controlled  
oscillator is connected to an output of a further phase-locked loop.
15. (new) The voltage-controlled oscillator of claim 2, wherein:  
the time-averaged effective inductance varies, depending on the control  
voltage  $U_{\text{con}}$  according to the relationship of the duration of the conducting state  
and the duration of the non-conducting state of the switching means within an  
oscillation period of the oscillator.
16. (new) The voltage-controlled oscillator of claim 3, wherein:  
the time-averaged effective inductance varies, depending on the control  
voltage  $U_{\text{con}}$  according to the relationship of the duration of the conducting state  
and the duration of the non-conducting state of the switching means within an  
oscillation period of the oscillator.
17. (new) The voltage-controlled oscillator of claim 5, wherein:  
the switching transistors are MOSFETs.
18. (new) The voltage-controlled oscillator of claim 2, wherein:  
the controllable switching means comprises switching transistors.
19. (new) The voltage-controlled oscillator of claim 18, wherein:  
the switching transistors are MOSFETs.
20. (new) The voltage-controlled oscillator of claim 3, wherein:  
the controllable switching means comprises switching transistors.

21. (new) The voltage-controlled oscillator of claim 20, wherein:  
the switching transistors are MOSFETs.
22. (new) The voltage-controlled oscillator of claim 4, wherein:  
the controllable switching means comprises switching transistors.
23. (new) The voltage-controlled oscillator of claim 22, wherein:  
the switching transistors are MOSFETs.
24. (new) The voltage-controlled oscillator of claim 19, wherein:  
the MOSFETs have gate terminals that are connected to the control input of  
the control voltage  $U_{con}$ .
25. (new) The voltage-controlled oscillator of claim 21, wherein:  
the MOSFETs have gate terminals that are connected to the control input of  
the control voltage  $U_{con}$ .
26. (new) The voltage-controlled oscillator of claim 23, wherein:  
the MOSFETs have gate terminals that are connected to the control input of  
the control voltage  $U_{con}$ .
27. (new) The voltage-controlled oscillator of claim 24, wherein:  
the MOSFETs have source terminals that are connected to parts of the circuit  
arrangement carrying the oscillator frequency.
28. (new) The voltage-controlled oscillator of claim 25, wherein:  
the MOSFETs have source terminals that are connected to parts of the circuit  
arrangement carrying the oscillator frequency.
29. (new) The voltage-controlled oscillator of claim 26, wherein:  
the MOSFETs have source terminals that are connected to parts of the circuit  
arrangement carrying the oscillator frequency.

30. (new) The voltage-controlled oscillator of claim 27, wherein:  
the oscillator is of a CMOS or bipolar technology.
31. (new) The voltage-controlled oscillator of claim 28, wherein:  
the oscillator is of a CMOS or bipolar technology.
32. (new) The voltage-controlled oscillator of claim 29, wherein:  
the oscillator is of a CMOS or bipolar technology.
33. (new) The voltage-controlled oscillator of claim 10, wherein:  
the voltage-controlled capacitance is embodied by means of at least one variable capacitor diode, wherein the effective capacitance depends on the tuning voltage  $U_{\text{tune}}$  at the tuning input.
34. (new) The voltage-controlled oscillator of claim 33, wherein:  
the tuning input of the oscillator is connected to an output of a phase-locked loop and the output of the voltage-controlled oscillator is connected to an input of the phase-locked loop.